

**Amendment and Response**

Applicant: Bernd Betz et al.

Serial No.: 10/575,798

Filed: July 10, 2008

Docket No.: I431.155.101/FIN527PCT/US

Title: PROCESS FOR PRODUCING AND APPARATUS FOR IMPROVING THE BONDING BETWEEN A PLASTIC AND A METAL

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**REMARKS**

The following remarks are made in response to the Non-Final Office Action mailed June 8, 2009. With this Response, claims 16, 21-23, 28-35, and 37-39 have been amended and claim 41 has been canceled. Claims 16-40 remain pending in the application and are presented for reconsideration and allowance.

**Drawings**

The Office Action objected to the drawings, stating that the *leadframe* feature was not illustrated. The specification notes that item 3 of Figure 1, for example, is the leadframe base body. Thus, the relevant portion of the leadframe is illustrated. To further clarify this, the claims have been amended to recite a “leadframe base body” or something similar. Thus, each element recited in the claims is illustrated.

Figure 2 was objected to because it does not include the reference number 10. However, in regards to Figure 2 the specification notes, “The individual silver grains 8 which form a continuous surface 6 *without voids 10* are illustrated in the figure.” (Emphasis added). The states that the voids 10 are not shown in Figure 2, and therefore there is no reference sign 10 designating voids in Figure 2.

Figure 1 was objected to because it included reference number 6. A replacement drawing sheet is included that removes reference number 6 from Figure 1.

The objections to the drawings are therefore believed to be overcome.

**Claim Rejections under 35 U.S.C. § 112**

Claim 41 was rejected under 35 U.S.C. 112, second paragraph, as allegedly being indefinite. Claim 41 has been canceled, thus rendering its rejection moot.

**Claim Rejections under 35 U.S.C. § 102**

Claims 16-19 and 21-26 are rejected under 35 U.S.C. 102(a) as being anticipated by Abbott, US 2004/0183166 (“Abbott”). Applicants respectfully traverse these rejections.

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Independent claims 16 and 23 have been amended to recite, “etching into the surface of the interlayer using the etchant to form a matrix of islands of remaining material of substantially uniform height with voids extending between these islands.”

It is well accepted that, to anticipate a claim, the cited reference must disclose each claim element. MPEP 2131. The Office Action admits that Abbott fails to disclose this feature. Moreover, the portions of the cited references identified in the Office Action fail to disclose an etching process to achieve such a surface. The Office Action states that Abbott disclose etching, but the reference appears to teach away from etching so as to form a matrix of islands in a surface. Rather, Abbott teaches etching to remove entire portions of the leadframe. Prior art references must be considered in their entirety, including portions that teach away from the claim elements. MPEP 2141.02VI.

The Ganesan reference, which was cited in conjunction with the rejection of other claims, also teaches away from roughing a leadframe surface by etching, instead teaching bombarding the leadframe using a grit material.

Since Abbott fails to disclose each element of claims 16 and 23, it cannot anticipate either of these claims, nor claims 17-19, 21, 22 and 24-26 dependent thereon.

**Claim Rejections under 35 U.S.C. § 103**

Claims 20, 27 and 28 were rejected under 35 U.S.C. 103(a) as allegedly being unpatentable over Abbot in view of Hirota, US 5,597,760. Claims 20, 27 and 28 all depend on either claim 16 or 23, which are allowable as set forth above. Claims 20, 27 and 28 are therefore allowable for at least the same reasons.

Claims 29-41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Abbott in view of Ganesan et al, US 5,554,569 (“Ganesan”). Claim 41 has been canceled. Applicants respectfully traverse the rejections of the remaining claims.

Claims 29 and 35 both include the interlayer having a surface comprising a matrix of islands of remaining material of substantially uniform height with voids extending between these

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islands. The Office Action admits that Abbott fails to disclose this feature, but instead relies on Ganesan, stating it would be obvious to modify the disclosure of Abbott based on Ganesan.

MPEP 2143.01 notes that, if a proposed modification or combination of the prior art would change the principle of operation of the prior art disclosure being modified, then the teachings of the references are not sufficient to render the claims *prima facie obvious*. (Citing *In re Ratti*, 270 F.2d 810, 123 USPQ 349 (CCPA 1959)).

Abbott teaches improving the adhesion between a leadframe and plastic molding compound by the selection of the material of the layers covering the base metal of the leadframe. For example, in paragraph [0028], Abbott teaches that conventionally electropositive metals are used for promoting adhesion to molding compounds. Abbott further teaches the use of a material that is less electronegative than the underlying layer but not electropositive, (see also paragraph [0028]), as an alternative solution to this problem.

In contrast, Ganesan discloses bombarding the lead frame with grit to roughen the surface of the leadframe for improving adhesion of a polymer to the leadframe. Modifying the device of Abbott to provide a rough leadframe surface for better adhesion of a molding compound, rather than using specific materials for layers covering the leadframe, would completely change the principle by which the Abbot device promotes adhesion of the molding material to the leadframe.

Since the modification of the Abbott reference proposed in the Office Action changes the principle of operation of the prior art device, the Office Action fails to establish *prima facie* obviousness. As such, Applicants respectfully submit claims 29-40 are in condition for allowance.

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**CONCLUSION**

In view of the above, Applicant respectfully submits that all of the pending claims are in form for allowance. Therefore, reconsideration and withdrawal of the rejections and allowance of the claims are respectfully requested.

No fees are required under 37 C.F.R. 1.16(h)(i). However, if such fees are required, the Patent Office is hereby authorized to charge Deposit Account No. 50-0471.

The Examiner is invited to contact the Applicant's representative at the below-listed telephone numbers to facilitate prosecution of this application.

Any inquiry regarding this Amendment and Response should be directed to Mark L. Gleason at Telephone No. (612) 767-2503, Facsimile No. (612) 573-2005. In addition, all correspondence should continue to be directed to the following address:

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Respectfully submitted,

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